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Examiner: Nghi H. Ly
GROUP ART UNIT: 2686
UNITED STATES PATENT AND TRADEMARK OFFICE

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Date: May 15, 2006

From: Georgann S. Grunebach
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Georgann S. Grunebach, Reg. No. 33,179
(Printed Name of Depositor)

May 15, 2006
(Date of Signature)

Re: Serial No. 09/661,986 Attorney Docket No. PD-200083

Filing Date: September 14, 2000

Please find attached:

- TRANSMITTAL FORM PTO/SB/21 (1 page)
- FEE TRANSMITTAL FORM PTO/SB/17 (1 page in duplicate)
- BRIEF ON APPEAL (15 pages)

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TRANSMITTAL FORM

(to be used for all correspondence after initial filing)

Total Number of Pages in This Submission	18

Application Number	09/661,988
Filing Date	September 14, 2000
First Named Inventor	Harold Rosen
Art Unit	2668
Examiner Name	LY, Nghi H.
Attorney Docket Number	PD-200053

ENCLOSURES *(Check all that apply)*

- [✓] Fee Transmittal Form
  - [ ] Fee Attached
- [ ] Amendment/Reply
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  - [ ] Affidavits/declaration(s)
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- [ ] Drawing(s)
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- [✓] Appeal Communication to TC **(Appeal Notice, Brief, Reply Brief)**
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Remarks

SIGNATURE OF APPLICANT, ATTORNEY, OR AGENT

Firm Name	The DirecTV Group, Inc.		
Signature			
Printed name	Georgann S. Grunebach		
Date	May 15, 2006	Reg. No.	33,179

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FEE TRANSMITTAL
For FY 2006

☐ Applicant claims small entity status. See 37 CFR 1.27

TOTAL AMOUNT OF PAYMENT ($) 500.00

Complete if Known	
Application Number	09/661,986
Filing Date	September 14, 2000
First Named Inventor	Harold Rosen
Examiner Name	LY, Nghi H.
Art Unit	2686
Attorney Docket No.	PD-200083

METHOD OF PAYMENT (check all that apply)

☐ Check ☐ Credit Card ☐ Money Order ☐ None ☐ Other (please identify): _____

☑ Deposit Account Deposit Account Number: 50-0383 Deposit Account Name: The DIRECTV Group, Inc.

For the above-identified deposit account, the Director is hereby authorized to: (check all that apply)

☑ Charge fee(s) indicated below ☐ Charge fee(s) indicated below, except for the filing fee

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FEE CALCULATION (All the fees below are due upon filing or may be subject to a surcharge.)

1. BASIC FILING, SEARCH, AND EXAMINATION FEES

	FILING FEES		SEARCH FEES		EXAMINATION FEES		
Application Type	Fee ($)	Small Entity Fee ($)	Fee ($)	Small Entity Fee ($)	Fee ($)	Small Entity Fee ($)	Fees Paid ($)
Utility	300	150	500	250	200	100	
Design	200	100	100	50	130	65	
Plant	200	100	300	150	160	80	
Reissue	300	150	500	250	600	300	
Provisional	200	100	0	0	0	0	

2. EXCESS CLAIM FEES

Fee Description	Fee ($)	Small Entity Fee ($)
Each claim over 20 (including Reissues)	50	25
Each independent claim over 3 (including Reissues)	200	100
Multiple dependent claims	360	180

Total Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 20 or HP =	_____	x _____	= _____

HP = highest number of total claims paid for, if greater than 20.

Indep. Claims	Extra Claims	Fee ($)	Fee Paid ($)
_____ - 3 or HP =	_____	x _____	= _____

HP = highest number of independent claims paid for, if greater than 3.

Multiple Dependent Claims	
Fee ($)	Fee Paid ($)
_____	_____

3. APPLICATION SIZE FEE

If the specification and drawings exceed 100 sheets of paper (excluding electronically filed sequence or computer listings under 37 CFR 1.52(e)), the application size fee due is $250 ($125 for small entity) for each additional 50 sheets or fraction thereof. See 35 U.S.C. 41(a)(1)(G) and 37 CFR 1.16(s).

Total Sheets	Extra Sheets	Number of each additional 50 or fraction thereof	Fee ($)	Fee Paid ($)
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4. OTHER FEE(S)

	Fees Paid ($)
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Other (e.g., late filing surcharge): Fee for Filing a brief in support of an appeal 37 CFR 41.20(b)(2)	$500

SUBMITTED BY

Signature		Registration No. (Attorney/Agent) 33,179	Telephone 310-964-4615
Name (Print/Type)	Georgann S. Grunebach		Date May 15, 2006

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Georgann S. Grunebach (Name of Appellant, Assignee or Registered Representative)

(Signature) May 15, 2006 (Date of Signature)

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Patent
PD-200083

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE
BEFORE THE BOARD OF PATENT APPEALS AND INTERFERENCES

Appellant(s): Harold Rosen

Serial No: 09/661,986 Group Art Unit: 2686

Filed: 09/14/2000 Examiner: Ly, Nghi H.

Title: FIXED CELL COMMUNICATION SYSTEM WITH REDUCED INTERFERENCE

BRIEF ON APPEAL

Mail Stop Appeal Brief - Patents
Commissioner for Patents
P. O. Box 1450
Alexandria, VA 22313-1450

Sir:

The following Appeal Brief is submitted in response to the Notice of Appeal filed March 21, 2006.

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01 FC:1402 500.00 DA

I. Real Party in Interest

The real party in interest in this matter is The DIRECTV Group, Inc. of El Segundo, California which is 34 percent owned by Fox Entertainment Group, which is approximately 82 percent owned by The News Corporation, Limited.

II. Related Appeals and Interferences

There are no other known appeals or interferences which will directly affect or be directly affected by or have bearing on the Board's decision in the pending appeal.

III. Status of the Claims

Claims 1, 4-15, 17-21, 23 and 24 are pending in the application. Claims 2, 3, 16 and 22 were previously canceled.

IV. Status of Amendments

There have been no amendments filed subsequent to the Final Action mailed February 21, 2006.

V. Summary of Claimed Subject Matter

The present invention is best understood with respect to the system illustrated in Fig. 1, the plot of beams using the same resources in Fig. 4 and a contour plot illustrating the suppression in Fig. 5. Generally, the present invention is used to selectively suppress side lobe interference by reshaping the antenna surface so that suppressed portions and non-suppressed portions are formed. The suppress portions align with beams having the same resource to prevent interference.

As is shown in Fig. 1, and described in the third full paragraph of page 5, a communication system 10 is described that generates a fixed reuse pattern 12 in a service area from a high altitude communication device 18 described in the first two paragraphs of page 6. The fixed reuse pattern 12 has at least a first resource cell and a second resource cell as illustrated by the various patterns in Fig. 2. This is described in the second full paragraph of page 7. The method of claim 1 further includes the step of selectively

suppressing a side lobe 52 (illustrated in Fig. 7B and described in the second full paragraph of page 9). Suppression is performed on the first beam as a first resource to form a suppressed portion and a non-suppressed portion so that the non-suppressed portion aligns with the second resource cell and a side lobe suppressed portion aligns with the first resource cell.

Claim 1 was amended previously to highlight that the suppressed portion is in the direction of other beams of the same resource while unsuppressed portions align with the beams of different resources (areas where no interference is present).

Claim 4 recites that the first resource and the second resource comprise a frequency. Claim 5 recites that the first and second resource comprise polarization and claim 6 recites that the first and second resource comprise an orthogonal code. Support for Claims 4-6 is found in the last sentence on page 8.

Claim 7 recites that the high altitude communication device comprises a satellite. Claim 8 recites that the high altitude communication device comprises a stratospheric platform. Support for the high altitude communication device is set forth in the third paragraph of page 5 and the second full paragraph of page 6.

Claim 9 is a communication system claim that is directed to a high altitude communication device 18 that has an antenna 32 as set forth in the first full paragraph of page 7 and is illustrated in Fig. 1. The antenna generates a first plurality of beams in the first resource and a plurality of main lobes directed to one of the first plurality of cells and a plurality of side lobes and a second plurality of beams having a second resource directed to one of the plurality of cells. The antenna selectively shapes the side lobes of the first plurality of beams to be selectively suppressed in directions of beams of said plurality of cells having said first resource and said side lobes are unsuppressed in the second plurality of cells. This is similar to the limitations described above with respect to claim 1. The suppression and non-suppression of the side lobes are best illustrated in Figs. 4 and 5 which are described in the first two paragraphs of page 8.

Claims 10 and 11 correspond to claims 7 and 8 above and, therefore, will not be described in further detail. Claims 12, 13, and 14 correspond to claims 4, 5, and 6 and also will not be described further here.

Claim 15 is directed to a method of forming a communication system that includes the steps of generating, with an antenna, a fixed re-use pattern having a maximum capacity having a first beam having a first resource and a plurality of beams having the first resource. This is illustrated in Figs. 2 and 3 and described in the last full paragraph of page 7.

Claim 15 also recites generating, with the antenna, a second plurality of beams having a resource different than the first resource. This is also illustrated in Figs. 2 and 3 and described in the last full paragraph of page 7. Claim 15 also recites identifying interference locations of the first beam relative to the plurality of second beams and selectively reshaping an antenna to selectively suppress at the interference locations with the first plurality of beams and maintaining the shape of the antenna in the non-interference locations. This is illustrated in Figs. 4 and 5 and the corresponding description in the first two paragraphs of Fig. 8.

Claim 15 further recites maintaining the antenna to not suppress interference at non-interference locations. This is also set forth in the first two paragraphs of page 8.

Claim 17 recites that the interference location corresponds to a side lobe of the first beam. This is set forth in the first paragraph of page 9.

Claims 18, 19, and 20 correspond to claims 4, 5, and 6 and, therefore, will not be described further here.

Claim 21 is directed to a method of reducing interference between beams in a fixed cell communication system generating a fixed reuse pattern using an antenna. This step includes selectively performing side lobe suppression only for beams using a same communication resource and maintaining a shape of the antenna to not suppress interference for beams using a different communication resource. This is also set forth in the first paragraph of page 9.

Claims 23 and 24 depend from claim 21. Claim 23 specifically recites generating a fixed reuse pattern at a satellite and claim 24 recites generating the fixed reuse pattern at a

stratospheric platform. These claims correspond to claim 7 and 8 and will not be further described.

VI. Grounds of Rejection to be Reviewed on Appeal

The following issues are presented in this appeal:

Whether Claims 1, 4-15 and 17-24 are unpatentable under 35 U.S.C. §103(a) over *Perahia* (6,188,896) in view of *Durvasula (6,137,451)*.

VII. Argument

The Rejection of Claims 1, 4-15 and 17-24 under 35 U.S.C. §103(a)

Independent Claim 1

The amendment made during the course of prosecution help highlight differences from *Durvasula*. The principal difference is the existence of only two beams (a primary and a secondary). Appellants respectfully submit that no teaching of non-interfering beams is present and thus no unsuppressed portions of the beam are described.

The Appellants agree with the Examiner's assessment that the *Perahia* reference does not teach selectively suppressing a side lobe of a beam. Appellants, however, disagree with the Examiner's assessment that *Durvasula* teaches "suppressing a side lobe of a beam having a first resource to form a suppressed portion and a non-suppressed portion so that said non-suppressed portion aligns with said second resource cell." The *Durvasula* reference is different than that of the present invention. The *Durvasula* reference has only a primary beam and a secondary beam. Appellants respectfully submit that the Examiner is reading more into the *Durvasula* reference than is set forth therein to form his hindsight reconstruction of the present invention. Appellants admit that the shaping of the reflector is set forth. However, the selective shaping set forth in the present claims is not set forth in the *Durvasula* reference. Appellants have reviewed the Col. 2, lines 9-30 as suggested by the Examiner.

Appellants respectfully submit that this portion is in the summary of the invention and thus the detailed description must be studied in order to find the meaning of these

sections. However, Appellants submit that beginning on line 21 of Col. 2 it states: "By increasing the diameter of the radiating aperture of the reflector, the side lobes of the primary beam can be brought closer in terms of angularization, to the main lobe of the primary beam. In order to minimize interference with transmissions of the secondary beam, the reflector is shaped to suppress primary-beam side lobes in the secondary-beam direction. Furthermore, the reflector is specifically shaped with a surface contour which directs lobes of the primary beam in directions away from the axis of the secondary beam." Upon a review of Col. 4, lines 37-53, it appears that the *Durvasula* reference describes the adjustment of the reflector of the primary feed. In Col. 4, line 42, it states: "Typically, in the construction of the antenna, a diameter of the radiating aperture of the reflector 28, by way of example, is on the order of 50 to 100 times as great as the diameter of the radiating aperture of the primary feed 30. A larger radiating aperture decreases angular spacing among the side lobes 66B and a smaller radiating aperture enlarges the angular spacing among the side lobes 66B. In particular, the angular spacing among the side lobes 66B of the primary radiation pattern 66 are selected to provide for essentially zero radiation in the direction of the main lobe 68A of the secondary radiation pattern 68 by appropriate shaping of the surface contour of the reflector." It appears that the overall surface contour of the device as well as the size of the radiating aperture is changed. Appellants respectfully submit that the entire side lobe is changed in the *Durvasula* reference. Changing the entire side lobe has been known as is set forth in the background of the present invention. These passages certainly do not teach "selectively reshaping the antenna surface at interference locations and maintaining a shape of the antenna in non-interference locations to form a suppressed portion and a non-suppressed portion so that the non-suppressed portion aligns with the second resource cell and a side lobe suppressed portion aligns with the first resource cell." It appears that the Examiner recognizes this and on page 4 of the Office Action states: "The teaching of *Durvasula* inherently teaches that after the reflector is reshaped, the non-suppressed portion will align with the second resource cell and side lobe suppressed portion will align with the first resource cell. The Examiner then points to Fig. 1, regions 40 and 44 and beams 30 and 32. Reference numerals 40 and 44 refer to the

primary beam footprint and secondary beam footprint that correspond to the primary and secondary beams 30, 32. As is described, "the secondary beam is directed to a separate portion of the earth" as stated in Col. 3, line 20. Appellants acknowledge that the reduction of interference between the primary and secondary beams is a desired goal. However, it appears that a conventional approach of changing the antenna shape to suppress the side lobes is set forth. No teaching of selectively changing the side lobes is set forth. Because no selective nature is set forth in the *Durvasula* reference, a suppressed and non-suppressed portion so that the non-suppressed portion aligns with the second resource cell and a side lobe suppressed portion aligns with the first resource cell is not taught or suggested. It should also be noted that on page 9 of the present application, one advantage of the invention is set forth. That is, by relaxing requirements on the side lobe, better main lobe performance may be achieved with the antenna design that requires side lobe suppression for all beams. Appellants respectfully submit that all beams are taught to be suppressed in the *Durvasula* reference.

Durvasula also appears to teach away from the present claims. Col. 4, line 54-Col. 5, line 4, suggests side lobe suppression for beams having different frequencies and different polarization. This is opposite to the present claims.

In response to the above argument, the Examiner in the Final Office Action dated December 21, 2005, characterizes the passage of Col. 2, lines 24-27, as "only the primary-beam's side lobes is selected (not the other) and it reads on applicant's 'selectively suppressing') at interference locations." However, the Examiner still fails to realize that the claim is not only to selectively suppressing which is set forth but to selectively suppressing a side lobe of a first beam having a first resource by selectively reshaping the antenna surface at interference locations and maintaining a shape of the antenna in non-interference locations to form a suppressed portion and non-suppressed portion so that the non-suppressed portion aligns with said second resource cell and a side lobe suppressed portion of the first beam aligns with other beams having the first resource. Thus, it is not only selectively selecting a side lobe but selectively suppressing the side lobe to form suppressed and non-suppressed portion and the alignment of the non-suppressed and suppressed

portions. Thus, it is believed that the Examiner is mischaracterizing the reference but even though the Examiner mischaracterizes the reference, he still fails to recognize the suppressed and non-suppressed portion in the alignment thereof.

In response to the above, the Examiner believes that the *Durvasula* reference does teach selective shaping. The Examiner points to column 2, lines 24 through 27. This sentence states, "In order to minimize interference with transmissions of the secondary beam, the reflector is shaped to suppress primary-beam side lobes in the secondary beam direction." The Examiner then goes on to state, "That is, only the primary beam side lobes is selected (not the other) and it reads on applicant's 'selective shaping.'" Appellants respectfully submit that this does not read fully upon the suppression set forth in the claims. Claim 1 specifically recites selectively reshaping the antenna at interference locations and maintaining a shape of the antenna in non-interference locations to form a suppressed portion and a non-suppressed portion so that the non-suppressed portion aligns with the resource cell and a side lobe suppressed portion of the beam aligns with other beams having the first resource. Appellants respectfully submit that this is different than that set forth in the claims. Appellants' desire is to not suppress as much of the beams as possible. Therefore, the portions that are non-suppressed correspond to the second resource cells since these beams do not have the same resource. The suppressed portions align with the same resource cells. While it is clear that the *Durvasula* reference does shape the reflector, the type of shaping and how the shaping is performed is very different than that set forth above. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to claim 1.

Independent Claim 9

Claim 9 is similar to Claim 1 except Claim 9 is set forth as a communication system. Claim 9 specifically recites that the antenna is selectively shaped so that side lobes of the first plurality of beams are selectively suppressed in the first plurality of cells having the first resource and the side lobes are unsuppressed in the second plurality of cells. Therefore, this is similar language to that set forth in Claim 1 and therefore Claim 9 is also believed to

be allowable for the same reasons set forth above. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to independent claim 9 as well.

Independent Claim 15

Claim 15 is a method claim that includes the steps of identifying interference locations of the first beam relative to the plurality of second beams, selectively reshaping an antenna to selectively suppress interference at the interference locations, and maintaining the antenna to not suppress interference at non-interference locations. These limitations are similar to those set forth in Claims 1 and 9 and therefore Claim 15 is believed to be allowable for the same reasons set forth above. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to independent claim 15.

Independent Claim 21

Claim 21 recites "selectively performing side lobe suppression only for beams using a same communication resource." The *Durvasula* reference does not teach that the primary beam and secondary beam utilize the same communication resource. Also, the *Durvasula* reference does not teach selectively performing side lobe suppression. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to independent claim 21 as well.

Dependent Claims 4, 12, and 18

Claims 4, 12, and 18 all recite that the first and second resource comprises a frequency. These claims stand or fall together with their independent claims.

Dependent Claims 5, 13, and 19

Claims 5, 13, and 19 recite that the first and second resource comprises polarization. These claims stand or fall together with their independent claims.

Dependent Claims 6, 14, and 20

Claims 6, 14, and 20 recite that the first and second resource is comprised as an orthogonal code. Appellants respectfully submit that no teaching of interference of orthogonal codes is set forth in the *Durvasula* reference. Therefore, Appellants respectfully request the Board to reverse the Examiner's position with respect to claims 6, 14, and 20.

Dependent Claims 7, 10, and 23

Claims 7, 10, and 23 recite that the communication platform is a satellite. Both the *Perahia* and *Durvasula* references teach a satellite and, therefore, these claims stand or fall together with their independent claims.

Dependent Claims 8, 11, and 24

Claims 8, 11, and 24 recite that the high altitude communication device is a stratospheric platform. Neither the *Durvasula* reference or the *Perahia* reference teaches or suggests the use of a stratospheric platform. Appellants, therefore, respectfully request the Board to reverse the Examiner's position with respect to claims 8, 11, and 24.

Dependent Claim 17

Claim 17 depends from claim 15 and recites that the interference locations correspond to a side lobe of the first beams. Claim 17 stands or falls together with independent claim 15.

VIII. Claims Appendix

A copy of each of the claims involved in this appeal, namely Claims 1, 4-15 and 17-24, is attached as a Claims Appendix.

IX. Evidence Appendix

None.

X. Related Proceedings Appendix

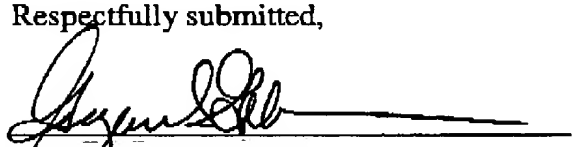
None.

Conclusion

For the foregoing reasons, Appellants respectfully request that the Board direct the Examiner in charge of this examination to withdraw the rejections.

Please charge any fees required in the filing of this appeal to deposit account number 50-0383. Fee Transmittal Form PTO/SB/17 is submitted in duplicate.

Respectfully submitted,



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Date: May 15, 2006

The DIRECTV Group, Inc.
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CLAIMS APPENDIX

1. A method of preventing interference in a communication system comprising the steps of:

generating a fixed reuse pattern in a service area from a high altitude communications device, said pattern having a plurality of first resource cells and a second resource cell having a resource different than the plurality of first resource cells;

selectively suppressing a side lobe of a first beam having a first resource by selectively reshaping the antenna surface at interference locations and maintaining a shape of the antenna in non-interference locations to form a suppressed portion and a non-suppressed portion so that said non-suppressed portion aligns with said second resource cell and a side lobe suppressed portion of the first beam aligns with other beams having the first resource.

4. A method as recited in claim 1 wherein said first resource and said second resource comprise a frequency.

5. A method as recited in claim 1 wherein said first resource and said second resource comprise polarization.

6. A method as recited in claim 1 wherein said first resource and said second resource comprise an orthogonal code.

7. A method as recited in claim 1 wherein said high altitude communication device comprises a satellite.

8. A communication system as recited in claim 1 wherein said high altitude communication device comprises a stratospheric platform.

9. A communication system comprising:

a high altitude communication device having an antenna for generating a first plurality of beams, each of said plurality of beams having a first frequency resource, a plurality of main lobes directed to one of a first plurality of cells and a plurality of side lobes and a second plurality of beams having a second resource directed to one of a second plurality of cells,

said antenna selectively shaped so that said side lobes of said first plurality of beams are selectively suppressed in directions of other beams of said first plurality of cells having said first resource and said side lobes are unsuppressed in the second plurality of cells.

10. A communication system as recited in claim 9 wherein said high altitude communication device comprises a satellite.

11. A communication system as recited in claim 9 wherein said high altitude communication device comprises a stratospheric platform.

12. A method as recited in claim 9 wherein said first resource and said second resource comprise a frequency.

13. A method as recited in claim 9 wherein said first resource and said second resource comprise polarization.

14. A method as recited in claim 9 wherein said first resource and said second resource comprise a code.

15. A method of forming a communication system comprising the steps of:

generating, with an antenna, a fixed reuse pattern having a maximum capacity having a first beam having a first resource and a first plurality of beams having the first resource;

generating, with the antenna, a second plurality of beams having a second resource different than the first resource;

identifying interference locations of said first beam relative to said plurality of second beams;

selectively reshaping an antenna to selectively suppress interference at the interference locations with the first plurality of beams and maintaining the shape of the antenna in non-interference locations, and

maintaining the antenna to not suppress interference at non-interference locations.

17. A method as recited in claim 15 wherein said interference locations correspond to a side lobe of said first beam.

18. A method as recited in claim 15 wherein said first resource and said second resource comprise a frequency.

19. A method as recited in claim 15 wherein said first resource and said second resource comprise polarization.

20. A method as recited in claim 15 wherein said first resource and said second resource comprise an orthogonal code.

21. In a fixed cell communication system generating a fixed reuse pattern using an antenna, a method of reducing interference between beams having side lobes, comprising:

selectively performing side lobe suppression only for beams using a same communication resource and maintaining a shape of the antenna to not suppress interference for beams using a different communication resource.

23. A method as recited in claim 21, wherein generating a fixed reuse pattern comprises generating the fixed reuse pattern at a satellite.

24. A method as recited in claim 21, wherein generating a fixed reuse pattern comprises generating the fixed reuse pattern at a stratospheric platform.